

WHAT IS CLAIMED IS

sub 90 → 1. An optoelectronic device, comprising:
an active region adjacent a DBR comprising a plurality of
mirror periods wherein said mirror periods comprise a first
5 layer formed from a first material having a first thermal
conductivity and a second layer formed from a second material
having a second thermal conductivity that is greater than said
first thermal conductivity and, wherein optical thickness of
said first layer does not equal optical thickness of said second
10 layer for at least a portion of the plurality of mirror periods.

2. The optoelectronic device of claim 1 wherein the
thickness of said first layers is one fourth of a wavelength of
light emitted by said optoelectronic device and wherein the
15 optical thickness of said second layers is an odd integer
multiple of one fourth of the wavelength of the light emitted by
said optoelectronic device.

3. The optoelectronic device of claim 1 wherein thickness
20 of the second layer of at least said portion of mirror periods
varies in a non-uniform fashion as a function of distance from
said active region.

4. The optoelectronic device of claim 3 wherein the
25 mirror period in closest proximity to the active region
comprises the thickest second layer.

5. The optoelectronic device of claim 4 wherein thickness
of the second layers decreases by an integer multiple of one
30 half of a wavelength of light emitted by said optoelectronic
device for mirror periods as a function of distance from said
active region.

6. The optoelectronic device of claim 1 wherein the optical thickness of said first layer is less than the optical thickness of said second layer and the sum of the optical thicknesses of said pair of layers is one half of a wavelength of light emitted by said optoelectronic device.

7. The optoelectronic device of claim 1 further comprising a second DBR adjacent said active region.

8. The optoelectronic device of claim 7 wherein said second DBR comprises a plurality of semiconductor mirror layers.

9. The optoelectronic device of claim 7 wherein said second DBR comprises a plurality of dielectric mirror layers.

10. The optoelectronic device of claim 7 wherein said second DBR comprises a hybrid mirror comprising a dielectric portion and a semiconductor portion.

11. The optoelectronic device of claim 1 wherein said active region comprises at least one quantum wells.

12. The optoelectronic device of claim 11 wherein at least one quantum wells comprise GaAs.

13. The optoelectronic device of claim 11 wherein at least one quantum wells comprise $\text{In}_{1-y}\text{GaAsN}_y$.

14. The optoelectronic device of claim 1 wherein the first material comprises $\text{Al}_x\text{Ga}_{1-x}\text{As}$ and the second material comprises AlAs.

15. The optoelectronic device of claim 14 wherein x equals zero.

16. An optoelectronic device, comprising;
5 an active region formed adjacent a DBR comprising a plurality of mirror periods wherein said mirror periods comprise a first layer, formed from a first material having a first thermal conductivity and a second layer, formed from a second material having a second thermal conductivity that is greater
10 than said first thermal conductivity and, wherein thickness of at least a portion of said mirror periods is greater than one-half wavelength of light emitted by said optoelectronic device.

17 The optoelectronic device of claim 16 wherein the thickness of said first layers is one fourth of a wavelength of light emitted by said optoelectronic device and wherein the thickness of said second layers is an odd integer multiple of one fourth of the wavelength of the light emitted by said optoelectronic device.

18. The optoelectronic device of claim 16 wherein the thickness of said second layers is one fourth of a wavelength of light emitted by said optoelectronic device and wherein the thickness of said first layers is an odd integer multiple of one
25 fourth of the wavelength of the light emitted by said optoelectronic device.

19. The optoelectronic device of claim 16 wherein the thickness of said first layers is an odd integer multiple of one
30 fourth of the wavelength of the light emitted by said optoelectronic device and wherein the thickness of said second

layers is an odd integer multiple of one fourth of the wavelength of the light emitted by said optoelectronic device.

20. The optoelectronic device of claim 16 wherein the
5 first material comprises $\text{Al}_x\text{Ga}_{1-x}\text{As}$ and the second material comprises AlAs .

21. The optoelectronic device of claim 20 wherein x equals zero.

10 22. The optoelectronic device of claim 21 wherein thickness of said first layers is greater than thickness of said second layers for at least said portion of said mirror periods having a thickness greater than one-half the wavelength of light emitted by said optoelectronic device.

23. The optoelectronic device of claim 16 further comprising a second DBR adjacent said active region.

20 24. The optoelectronic device of claim 23 wherein said second DBR comprises a plurality of semiconductor mirror layers.

25 25. The optoelectronic device of claim 23 wherein said second DBR comprises a plurality of dielectric mirror layers.

26. The optoelectronic device of claim 23 wherein said second DBR comprises a hybrid mirror comprising a dielectric portion and a semiconductor portion.

30 27. The optoelectronic device of claim 16 wherein said active region comprises at least one quantum wells.

28. The optoelectronic device of claim 27 wherein at least one quantum wells comprise GaAs.

29. The optoelectronic device of claim 27 wherein at least one quantum wells comprise $\text{In}_{1-y}\text{GaAsN}_y$.

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